White Paper

Managing SIF Exposures
for Safety Resiliency in Oil & Gas

DEKRA 100 YEARS

For 100 years, **DEKRA** has been chosen to partner in proactively **keeping organizations safe** around the world as the **largest safety company in the world.**

The oil and gas industry works hard to provide the world with the fuel it needs to power and support our day-to-day lives. Unfortunately, the extraction of oil and gas can expose workers to many on-the-job hazards. Recently, researchers analyzed severe work-related injury incidents from 32 Occupational Safety and Health Administration jurisdictions to identify possible trends specific to the oil and gas extraction industry. Severe work-related injuries were defined as those in which an employer reported inpatient hospitalization, amputation, or loss of an eye. The dataset included 2,101 severe work-related injury incidents that occurred between January 2015 and July 2022.

The researchers' analysis found that severe work-related injuries are still far too common, specifically:

- Most severe work-related injuries were reported by contractor oil and gas extraction employers
- Contractor oil and gas personnel performing operations support activities in well-servicing companies made up 70% of the injuries (1,473/2,101)
- Contractor oil and gas well drillers made up 23.4% of injuries (491/2,101)
- 60.9% of incidents were caused by workers making contact with objects and equipment (1,280/2,101)
- 17.6% of incidents were caused by slips, trips, and falls (370/2,101)

Analytics for SIF prevention: SIF actuals vs. SIF potential

Thorough investigations of incidents that result in serious injuries and fatalities (SIFs) can provide organizations with valuable information about how to prevent similar incidents from occurring in the future. However, there is a critical problem with exclusively investigating incidents that result in SIFs: Because SIF events, called SIF actuals, do not occur frequently, there is limited data for organizations to use to identify trends that can inform their SIF prevention strategies.

Organizations that reduce the rate of SIF potential see a corresponding reduction in SIF actual incidents.

A solution: Organizations can increase the amount of data available by analyzing SIF potential (SIFp). SIF potential is defined as an incident that has the potential to cause a SIF, regardless of whether a SIF did or did not occur. DEKRA's research shows that 25% of OSHA recordable injuries have the potential to cause a SIF actual. In other words, 1 in 4 OSHA recordable injuries could have resulted in more severe outcomes if even a small, single factor changed. Organizations that reduce the rate of SIF potential see a corresponding reduction in SIF actual incidents.

Understanding anticipated and unanticipated SIF exposure

Incidents with SIF potential fall into two categories: anticipated SIF exposure and unanticipated SIF exposure. Anticipated SIF exposure is defined as a SIF exposure where two or more people have the opportunity to develop a plan to mitigate and control exposures, thereby protecting the worker(s). In other words, the organization (1) recognizes that a SIF exposure is present in the task ahead and (2) has enough time to plan how to manage the exposure.

Organizations can effectively manage anticipated SIF exposures by creating a detailed plan that includes things like dedicated permitting procedures, event-specific job safety briefings, and field verification of critical control audits. A good example of anticipated SIF exposure is confined space entry (as is any permitted work).

Unanticipated SIF exposure is defined as a SIF exposure in which two or more people DO NOT have the opportunity (i.e., enough time) to mitigate or control an exposure. In other words, the organization might know the potential for a SIF exposure exists; however, the SIF exposure can occur at any random point during a work task. The organization cannot protect workers from unanticipated SIF exposures as easily as anticipated SIF exposures due to the random nature of the SIF exposure.

A good example of an unanticipated SIF exposure is an equipment jam. The organization might know that machines jam all the time, but it does not know the exact moment a SIF exposure will occur. The moment the unanticipated SIF exposure occurs, the worker must make decisions quickly about how to mitigate and control the exposure. Any flaw in the worker's decision-making can lead to life-altering injuries.

Addressing unanticipated SIF exposures requires organizations to do two things: build their workers' resilience and align the contextual factors to promote safe decision-making. Resilience is defined as a worker's ability to respond to unplanned changes. When a worker is exposed to an unanticipated SIF exposure, the worker can show resiliency by engaging in the safe action while resisting any other force (such as schedule or budget pressure) that might influence them to engage in the unsafe action. Resiliency only occurs when an organization's leadership and culture fully support the worker in their decision to control exposure, even if it means negatively impacting production.

Relatedly, an organization's leadership must understand and monitor how contextual factors can influence their worker's ability to make a safe decision. Contextual factors include items such as safety climate, pause-work authority, and production pressure. When contextual factors are aligned correctly, employees are likely to identify and control exposures. When contextual factors are not aligned, the organization places a worker at risk when it matters most—the moment a worker comes into contact with an unexpected hazard.

It is important to note that when we talk about anticipated and unanticipated SIF exposure, we are not talking about scheduled or unscheduled work. The work might be routine or non-routine, and the task itself might be planned. However, the critical distinction is that unanticipated SIF exposures are defined by the nature of the SIF exposure—it is unexpected by the worker at the moment it occurs.

Addressing unanticipated SIF exposures requires organizations to do two things: build their workers' resilience and align the contextual factors to promote safe decision-making.

A three-pronged approach to SIF prevention

In order to develop an effective SIF prevention program, the organization must analyze its incident data to understand the types of SIF exposures that exist. Then, the organization can begin to align its SIF prevention strategies using DEKRA's three-pronged approach.

1. Evaluate. First, the organization must continually analyze every new incident to evaluate whether the potential for SIF exposure exists.

2. Manage. Second, the organization must effectively manage anticipated SIF exposures. The organization must thoroughly analyze the safety processes that are in place when a scheduled SIF exposure occurs.

3. Empower. Third, the organization's leadership must create a safety culture in which workers are empowered to make safe decisions.

Oil and gas industry extraction is a complex and dynamic industry that is committed to protecting the well-being of its workers. Though significant strides have been made in the industry, organizations can bolster their SIF prevention programs by identifying and controlling exposures with SIF potential, building a resilient workforce, and aligning the contextual factors to promote their workers' resiliency and safe decision-making when it matters most.

References

[1] Parasram V, Socias-Morales C, Reichard A. Severe Work-Related Injuries in the Oil and Gas Extraction Industry — 32 Federal Occupational Safety and Health Administration Jurisdictions, United States, January 2015–July 2022. MMWR Morb Mortal Wkly Rep 2024;73:104–109.
DOI: http://dx.doi.org/10.15585/mmwr.mm7305a3.

Connect with Us:
Email us at
osr.info.us@dekra.com
Call us: +1-805-646-0166 or visit
DEKRA.us/consulting